COMMONWEALTH OF VIRGINIA Department of Environmental Quality Tidewater Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Perdue Farms, Incorporated Chesapeake, Virginia Permit No. TRO60277

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Perdue Farms, Incorporated has applied for a Title V Operating Permit for its Chesapeake facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Stephen A. Hackney Environmental Engineer Senior (757) 518-2124	Date:	
Jane A. Workman Air Permit Manager	Date:	
Harold J. Winer Deputy Regional Director	Date:	

FACILITY INFORMATION

Permittee Perdue Farms, Incorporated

501 A Barnes Road

Chesapeake, Virginia 23324

Facility Perdue Farms, Chesapeake Oilseed Plant

501 A Barnes

Norfolk, Virginia 23324

AFS ID No.: 51-550-00038

SOURCE DESCRIPTION

SIC Code: 2075 – Extraction of soybean oil from raw soybeans, processing of soybean flakes into meal and the pelletizing of soybean hulls and other byproducts into hull pellets.

Perdue's production operations consist of four distinct procedures: soybean preparation, soybean hull pelletizing, soybean oil extraction, and soybean meal processing.

Soybean preparation: cleaning, drying, cracking, dehulling, and flaking of raw soybeans, resulting in hulls and flakes of soybean meat. Emissions are particulate.

Soybean hull pelletizing: hulls and screenings are ground and then pelletized in specially designed equipment. Emissions are particulate.

Soybean oil extraction: extracts soybean oil from soybean flakes (using hexane as a solvent). The extraction process produces a soybean oil/hexane mixture and hexane-laden flakes. While hexane is recovered for re-use, some fugitive emissions do occur. Emissions are VOC/hexane.

Soybean meal processing: drying, cooling, and grinding the spent flakes produced in the extraction process (after hexane has been removed from the flakes). The spent flakes are referred to as soybean meal and this is one of the products. The primary emissions from this process are particulate.

COMPLIANCE ASSURANCE MONITORING

All of the emission units at a Title V facility that have major levels of emissions for a pollutant must be considered for CAM applicability. Perdue Farms has several emissions units that are considered major for emissions of either particulate or hexane. The soybean-oil extraction unit is covered by a NESHAP that was published after the cutoff date for CAM. This serves to afford an exemption for the units that are part of the extraction process. Therefore, a survey of the facility calculations for PTE is the next step to identify any emissions units that may have major source levels of particulate or PM10 emissions. The application Table 4-2(b) shows several permitted and unpermitted emission units that have apparent uncontrolled emissions above the 100-ton threshold. The PTE for these units assumes a control efficiency of 99% for the fabric filters and a lower efficiency for various cyclones. Some of

these units can be found in the NSR permits for the hull pelletizing process and the dryer/cooler installation. For units not subject to the Rule, periodic monitoring is appropriate.

CAM PLAN ANALYSIS

Overview

A review of the permit application calculations reveals that the following emission units have major source levels of particulate emissions; Units # 132, 136/43, 754, 175, 156, CFB-1, 104, 107A-E, 111, 113A-F/520, 113H-M/521, 163/532 and 164/533. These emission units will either have a permit limit or are subject to the particulate matter standard. All of the units have some type of control equipment and thus are subject to the CAM Rule. The analysis of the PTE before and after controls is included in the CAM Plan (copy attached).

Monitoring Approach

Visible emissions are used as an indicator. Normal process operations will not produce conditions that adversely affect the cyclones or fabric filters, so no process operational parameters will be monitored. The following procedure will be used to monitor visible emissions on a daily basis. A one-minute observation will be performed and the results recorded in a logbook by the observer. An excursion is defined as the presence of visible emissions and no averaging is allowed. If any visible emissions are detected, corrective action must be taken. Records shall be kept of all observations results, any corrective actions required and any Quality Improvement Plans that are developed and implemented.

Quality Improvement Plan

If there are five excursions in any consecutive six-month period, a Quality Improvement Plan will be developed and implemented.

INCLUSION OF APPLICABLE REQUIREMENTS

This Title V permit document, by definition, contains all of the applicable requirements for the emission units at the Perdue Oilseed Facility. The expected result of including all applicable requirements for various emission units is that some units are affected by two or more requirements dealing with the same subject. At the Perdue Facility, the predominant pollutant outside of the extraction unit is particulate. These emissions are not only subject to discreet emission limitations in a NSR permit condition, but also are subject to the standards for particulate and visible emissions in Chapter 40 or Chapter 50 of the Regulations. It is not unusual in a Title V permit to have multiple applicable requirements for a single emission unit. Compliance Assurance Monitoring may also add an additional requirement to some emission units, but only if they are not exempt. The CAM Plan was not originally submitted by the facility but was developed in a joint effort with Perdue Farms. Early research on CAM Plan formats showed that other states (Wyoming and Minnesota) proposed the CAM Plan as an attachment to the Title V permit. However, the intent of the EPA regulation on CAM indicates that each facility with units subject to CAM should make the plan a part of the Title V application. The CAM Plan describes those emission units that are not exempt from CAM and have potential uncontrolled emissions of more than 100 tons of particulate. CAM does not replace other monitoring that already exists in the Title V

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permit; all of the monitoring requirements remain valid. What CAM does implement is an additional level of monitoring for affected emissions units. The objective of the Title V permit is to identify and list all of the applicable requirements from NSR permits, the State Regulations, the Federal Regulations and any other valid source. In drafting the Title V permit for Perdue, the intent was to include all valid applicable requirements.

COMPLIANCE STATUS

A full compliance evaluation of this facility, including a site visit, has been conducted. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time.

Emission Units

Equipment to be operated consists of:

Emission Unit ID	Vent and Stack ID	Emission Unit Description	Size/Rated Capacity	Applicable Permit Date	
Chesapeake	Oilseed Plant				
W	S-1	Bean Tank 194; soybean grain handling	125 tons per hour	N/A	
V	S-2	Bean Tank 194; soybean grain handling	125 tons per hour	N/A	
Z	S-3	Bean Tank 195; soybean grain handling	125 tons per hour	N/A	
Υ	S-4	Bean Tank 195; soybean grain handling	125 tons per hour	N/A	
Х	S-5	Bean Tank 195; soybean grain handling	125 tons per hour	N/A	
40	S-6	Whole bean surge tank; soybean grain handling	125 tons per hour	N/A	
104	S-7	Fluidized bed dryer, soybean grain drying	122 tons per hour	N/A	
107A-E	S-9	Primary aspirators (5); soybean cracking, dehulling	120 tons per hour	N/A	
111	S-10	Secondary aspirators (4); soybean cracking, dehulling	119 tons per hour	N/A	
130	S-6	Coarse hull aspirator, soybean cracking, dehulling	3.0 tons per hour	N/A	
132	S-6	Mids hull aspirator, soybean cracking, dehulling	1.5 tons per hour	August 29, 1995	
136/43	S-11	Hull grinding and product hull tank; soybean hull grinding and storage	21.3 tons per hour	August 29, 1995	
101	S-6	Whole bean scalper; soybean cleaning	125 tons per hour	N/A	
102	S-6	Whole bean aspirator; soybean cleaning	123 tons per hour	N/A	
116	S-6	Weed seed aspirator; Soybean cleaning	1.0 tons per hour	N/A	
119	S-6	Pod cyclone; soybean cleaning	1.0 tons per hour	N/A	
113A-F/520	S-8	Flakers/discharge drag (A to F); soybean flaking	61 tons per hour	N/A	
113H-M/521	S-8	Flakers/discharge drag (H to M); soybean flaking	61 tons per hour	N/A	
156	S-13 and S- 14	DeSmet dryer/cooler; soybean meat drying and cooling	96 tons per hour	July 9, 2003	
50	S-15	Clay tank; additive tank	25 tons per hour	N/A	
163/532	S-16	Sifters/grinder feed drag; soybean meal sifting and grinding	121 tons per hour	N/A	
164/533	S-16	Meal grinders/discharge drag; soybean meal sifting and grinding	96 tons per hour	N/A	
44	S-17	North meal tank; meal storage	95 tons per hour	N/A	
48	S-18	South pellet/meal tank; pellet/meal storage	95 tons per hour	N/A	

75	S-19	Meal shed; meal loadout	350 tons per hour	N/A				
1001	S-16	Meal scale; meal loadout	95 tons per hour	N/A				
443	S-20	Pellet, hull and meal railcar loadout	95 tons per hour	N/A				
444	S-21	Pellet and meal truck loadout	95 tons per hour	N/A				
754	S-22	Production tank blower; hull transfer and storage elevator	21 tons per hour	N/A				
758A	S-22	Pellet tank blower; pellet transfer and storage elevator	21 tons per hour	N/A				
754	S-27	Production tank blower; soybean hull pelletizing	15 tons per hour	August 29, 1995				
175	S-28	Pellet cooler; soybean hull pelletizing	15 tons per hour	August 29, 1995				
ST-1/ST-2	S-29	Oil extraction process; grain mill	48 tons per hour	N/A				
EA-1	S-33	Extraction processes and solvent recovery; from soybean oil extraction process	70 tons per hour	N/A				
AS-1	S-31	Ash silo; ash handling	30 tons per hour	January 13, 2004				
ATL-1	S-32	Ash truck loadout; ash handling	60 tons per hour	January 13, 2004				
Fuel Burnin	Fuel Burning Equipment							
CFB-1	S-30	Coal-fired boiler; steam generation	106.0 million Btu per hour	January 13, 2004				

^{*}The Size/Rated capacity is provided for informational purposes only, and is not an applicable requirement.

Pollution Control Equipment Consists of:

Vent/Stack No.	Control Equipment	Manufacturer and Date of	Size/Rated Capacity	Pollutants Controlled	
	Description	Construction			
S-6	Whole bean dust collector	Carter Day 144RJ96 (1-30-73)	99% efficient	PM/PM10	
S-7	Hot hull cyclones	Carter Day 68HV	95% efficient	PM/PM10	
S-8	Flaker aspiration cyclone	Carter Day 56HV	95% efficient	PM/PM10	
S-9	Primary dehulling cyclone	Escher Wyss Cyclone Z1-200	95% efficient	PM/PM10	
S-10	Secondary dehulling cyclone	Escher Wyss Cyclone Z1-200	95% efficient	PM/PM10	
S-11	Ground hull dust collector	Rolfes Model 42-RLP-10	99% efficient	PM/PM10	
S-13	Dryer cooler cyclone 1	Kice CKS 132	95% efficient	PM/PM10	
S-14	Dryer cooler cyclone 2	Kice CKS 132	95% efficient	PM/PM10	
S-15	Clay tank dust collector	Cargill design	99% efficient	PM/PM10	
S-16	Meal grinding dust collector	Carter Day 144RJ60	99% efficient	PM/PM10	
S-21	Loadout dust collector	Carter Day 74RJ96	99% efficient	PM/PM10	
S-22	Hull receiving cyclone dust collector	Carter Day 24RJ60 Elevator	99% efficient	PM/PM10	
S-27	Dust collector	Kice HRB 24-10	99% efficient	PM/PM10	
S-28	Pellet cooler cyclone	Model 1 HE 39 High Efficiency	99.5% efficient	PM/PM10	
S-30	Baghouse	Fuller pulse dust collector 8 zone # 128 Twin Line	99% efficient	PM/PM10	
S-31	Baghouse	Flex Kleen 84-CTBC-30	99% efficient	PM/PM10	

^{*}The Size/Rated capacity and PCD efficiency is provided for informational purposes only, and is not an applicable requirement.

EMISSIONS INVENTORY

A copy of the emissions for the 2003 emissions statement is attached. Emissions are summarized in the following tables.

2003 Actual Emissions

	2003 Criteria Pollutant Emissions in Tons per Year					
Emission Unit	VOC	СО	SO_2	*PM ₁₀	NO _x	Lead(Pb)
Facility	303.782	52.2375	345.394	9.3351	114.923	0.0
Total	303.782	52.2375	345.394	9.3351	114.923	0.0

^{*} PM2.5 emissions are assumed as identical to the PM10 emissions above.

2003 Facility Hazardous Air Pollutant Emissions

Pollutant	2003 Hazardous Air Pollutant Emission in Tons/Yr
hexane	303.782

EMISSION UNIT APPLICABLE REQUIREMENTS - Hull Grinding and Pelletizing Line

Limitations

Following are limitations from the existing NSR permit issued August 29, 1995:

Condition 3: describes the control technology for particulate emissions.

Condition 4: constructed to allow for emissions testing; test ports to be provided.

Condition 5: establishes throughput limit for the new hull pelletizing operation.

Conditions 6 and 7: limiting criteria pollutant emissions and visible emissions.

Condition 10: terms under which the permit may be modified or revoked; General Condition.

Condition 11: Entry requirements for regulating authorities; General Condition.

Condition 12: facility or control equipment malfunction; General Condition.

Condition 16: Change in control of ownership.

Condition 17: Requests for information.

Recordkeeping

Following are recordkeeping requirements from the existing NSR permit issued August 29, 1995.

Conditions 9, 13 and 14: recordkeeping requirements.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-50-80: New Source Standard for Visible Emissions

Streamlined Requirements

There are no streamlined conditions for this permit.

EMISSION UNIT APPLICABLE REQUIREMENTS – De Smet dryer/cooler [Unit # 156]

Limitations

Following are limitations from the existing NSR permit, issued July 9, 2003:

Condition 3: describes the control technology for particulate emissions.

Condition 4: establishes soybean meal throughput limit for the dryer/cooler.

Conditions 5 and 6: limiting criteria pollutant emissions and visible emissions.

Condition 7: requirements by reference states the applicable MACT; 'GGGG'.

Condition 12: permit invalidation due to delay in construction beyond 18 months.

Condition 17: violation of ambient air quality standard; Facility Wide Condition.

Condition 19: revoking and/or suspending permits; conditions for; General Condition.

Condition 13: entry requirements for regulating authorities, General Condition.

Condition 21: registration update; General Condition.

Recordkeeping

Following are recordkeeping requirements from the existing NSR permit, issued July 9, 2003.

Conditions 8 and 18: recordkeeping requirements.

Notifications and Reporting

Following are notification requirements from the existing NSR permit issued July 9, 2003.

Condition 11: Initial Notification; installation/startup/testing of NSPS equipment.

Conditions 14, 15 and 16: Notifications for maintenance, malfunctions, and HAP processes.

Testing

Following are testing requirements from the existing NSR permit, issued July 9, 2003.

Conditions 9 and 10: testing and monitoring requirements.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-50-80: New Source Standard for Visible Emissions

Streamlined Requirements

There are no streamlined conditions for this permit.

EMISSION UNIT APPLICABLE REQUIREMENTS – Vogt Coal-fired Boiler [CFB-1] and Ash Silo [AS-1]

Limitations

Following are limitations from the existing NSR/PSD permit issued January 13, 2004:

Conditions 3, 4 and 5: describe the control technology for boiler and ash silo emissions.

Conditions 6 and 7: prescribe the approved fuel and the coal throughput for the boiler.

Conditions 8, 9, 10 and 11: limits criteria pollutant emissions, coal specs and visible emissions.

Condition 15: entry requirements for regulating authorities; General Condition.

Condition 18: violation of ambient air quality standard; Facility Wide Condition.

Condition 20: revoking and/or suspending permits; conditions for; General Condition.

Condition 22: registration update; General Condition.

Monitoring

Following are monitoring requirements from the existing NSR/PSD permit issued January 13, 2004

Condition 12: describes monitoring for visual emissions.

Recordkeeping

Following are recordkeeping requirements from the existing NSR/PSD permit issued January 13, 2004

Conditions 13 and 19: on-site and maintenance recordkeeping requirements.

Notifications and Reporting

Following are notification requirements from the existing NSR/PSD permit, issued January 13, 2004.

Conditions 16 and 17: Notifications for control equipment maintenance and malfunctions.

Testing

Following are testing requirements from the existing NSR/PSD permit, issued January 13, 2004.

Condition 14: testing and monitoring requirements for construction; test ports.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-50-80: New Source Standard for Visible Emissions

Streamlined Requirements

There are no streamlined conditions for this permit.

FACILITY WIDE CONDITIONS

Following are applicable requirements that apply facility-wide or to groups of emission units.

Limitations

Condition VII.A.1: Existing source standard for particulate matter.

Condition VII.A.2: Maximum emission rate for particulate matter.

Condition VII.A.3: Determination of individual emission rates.

Condition VII.A.4: Interpolation of values for the process weight rate.

Condition VII.A.5: Interpretation of regulations.

Condition VII.A.6: Interpolation equation for the process weight rate.

Condition VII.A.7: Extrapolation equation for the process weight rate.

Condition VII.A.8: Existing source standard for visible emissions.

Condition VII.A.9: New source standard for visible emissions.

Condition VII.A.8: Violation of ambient air quality standard.

Monitoring

Condition VII.B.1: Method for Compliance Assurance Monitoring. Condition VII.B.2: Requirements for a Quality Improvement Plan. Condition VII.B.3: Visible emissions monitoring for all emission units with limits.

Recordkeeping

Condition VII.C.1: Recordkeeping for CAM.
Condition VII.C.2: Visible Emissions Observation Records.

Testing

Condition VII.D.1: Requirement for testing/monitoring ports.

Reporting

Condition VII.E.1: Reporting for CAM

Facility and Control Equipment Maintenance or Malfunction

Condition VII.F.1: Notification for Control Equipment Maintenance Condition VII.F.2: Notification for Control Equipment Malfunction – Hazardous Pollutant Processes Condition VII.F.3: Maintenance/Operating Procedures

Calculation Demonstration for the Particulate Matter Standard

Periodic monitoring for particulate matter emission rates is not required in the permit, because monitoring uses visible emissions as a parametric measure of normal control equipment operation. The fluidized bed dryer for the soybeans is typically the largest source of particulate emissions for the facility. The calculations below show that the likelihood of exceeding the standard is not great.

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Fluidized Bed Dryer = 122 tons/hour x 7.2 lbs/ton = 878.4 lbs/hr x (1-.99) = 8.78 lbs/hour. Process Weight Rate = [E = 55P^{0.11} - 40], therefore E = 55(122)^{0.11} - 40 = \underline{53.3} lbs/hour. Therefore, the maximum emission rate for the dryer is well below the Rule 4-4 limit.
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GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal-operating permitted sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

Comments on General Conditions

B. Permit Expiration

This condition refers to the Board taking action on a permit application. The Board is the State Air Pollution Control Board. The authority to take action on permit application(s) has been delegated to the Regions as allowed by §2.1-20.01:2 and §10.1-1185 of the *Code of Virginia*, and the "Department of Environmental Quality Agency Policy Statement NO. 3-2001".

This general condition cite(s) the Article(s) that follow(s):

Article 1 (9 VAC 5-80-50 et seq.), Part II of 9 VAC 5 Chapter 80. Federal Operating Permits for Stationary Sources

This general condition cites the sections that follow:

9 VAC 5-80-80. Application

9 VAC 5-80-140. Permit Shield

9 VAC 5-80-150. Action on Permit Applications

F. Failure/Malfunction Reporting

Section 9 VAC 5-20-180 requires malfunction and excess emission reporting within four hours of discovery. Section 9 VAC 5-80-250 of the Title V regulations also requires malfunction reporting; however, reporting is required within two days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to section 9 VAC 5-20-180 including Title V facilities. Section 9 VAC 5-80-250 is from the Title V regulations. Title V facilities are subject to both sections. A facility may make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within four daytime business hours of discovery of the malfunction.

J. Permit Modification

This general condition cites the sections that follow:

- 9 VAC 5-80-50. Applicability, Federal Operating Permit For Stationary Sources
- 9 VAC 5-80-190. Changes to Permits.
- 9 VAC 5-80-260. Enforcement.
- 9 VAC 5-80-1100. Applicability, Permits For New and Modified Stationary Sources
- 9 VAC 5-80-1790. Applicability, Permits For Major Stationary Sources and Modifications Located in Prevention of Significant Deterioration Areas
- 9 VAC 5-80-2000. Applicability, Permits for Major Stationary Sources and Major Modifications Locating in Nonattainment Areas

U. Malfunction as an Affirmative Defense

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in sections 9 VAC 5-80-250 and 9 VAC 5-20-180. The malfunction requirements are listed in General Condition U and General Condition F. For further explanation, see the comments on general condition F.

This general condition cites the sections that follow:

- 9 VAC 5-20-180. Facility and Control Equipment Maintenance or Malfunction
- 9 VAC 5-80-110. Permit Content

STATE ONLY APPLICABLE REQUIREMENTS

The state-only applicable requirements for this facility are found in the State Only Section of the permit and describe the standards for odor and toxic pollutants:

- 9 VAC 5-50-140 Standard for Odorous Emissions, and
- 9 VAC 5-60-320 Standard for Toxic Pollutants

FUTURE APPLICABLE REQUIREMENTS

There are no future applicable requirements.

INAPPLICABLE REQUIREMENTS

Tanks previously subject only to recordkeeping and reporting under 40 CFR 60, Subpart Kb have been exempted by EPA's recent amendment of Subpart Kb (see Wednesday, October 15, 2003, Federal Register, attached). The facility did not report any other inapplicable requirements

COMPLIANCE PLAN

There is no compliance plan for this facility.

INSIGNIFICANT EMISSION UNITS

The following units have been identified as insignificant:

Emission Unit	Emission Unit	Citation	Pollutant(s) Emitted (9	Rated Capacity	
No.	Description	C11441011	VAC 5-80-720 B)	(9 VAC 5-80-720 C)	
418	D. T. Discharge screw	5-80-720 C.2.a	PM, PM10	less than 5 tons/yr	
418a	D. T. Discharge drag	5-80-720 C.2.a	PM, PM10	less than 5 tons/yr	
419	Dryer cooler feed drag	5-80-720 B.5.	PM, PM10	less than 5 tons/yr	
709	Expander exhaust fan (air break)	5-80-720 B.5.	PM, PM10	less than 5 tons/yr	
1, 3, 4, 10-18	Soybean oil storage tanks	5-80-720 B.5.	VOC (hexane)	less than 5 tons/yr	
	Soybean oil loadout	5-80-720 B.2.	VOC (hexane)	less than 5 tons/yr	
999	Extraction feed drag air break	5-80-720 B.2.	PM, PM10	less than 5 tons/yr	
998	Coal silo vent	5-80-720 B.2.	PM, PM10	less than 5 tons/yr	
997	Welding Shop	5-80-720 B.2.	PM, PM10	less than 5 tons/yr	
42	Weed seed tank	5-80-720 B.2.	PM, PM10	less than 5 tons/yr	
17	Elevator hull tank	5-80-720 B.2.	PM, PM10	less than 5 tons/yr	
18	Elevator hull tank	5-80-720 B.2.	PM, PM10	less than 5 tons/yr	
19	Elevator hull tank	5-80-720 B.2.	PM, PM10	less than 5 tons/yr	
20	Elevator hull tank	5-80-720 B.2.	PM, PM10	less than 5 tons/yr	
759	Pellet blower	5-80-720 B.2.	PM, PM10	less than 5 tons/yr	

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CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

PUBLIC PARTICIPATION

The proposed	permit wil	l be place	ed on public	notice in	the	Virginian	Pilot from
[date]	to	[date]		_ •			